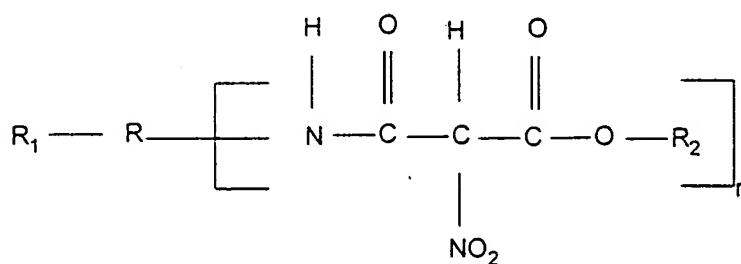


5 We claim:

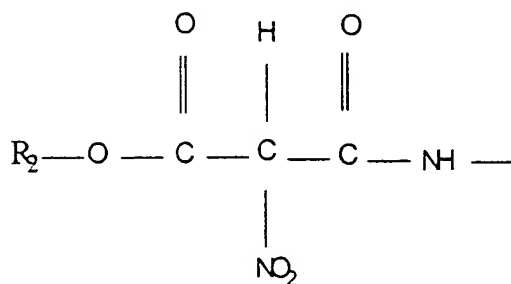
1. A nitrile oxide precursor compound of the general formula:



Formula I

10 wherein R is a substituted or unsubstituted C<sub>1-17</sub> alkyl, alkoxy, cycloalkyl, aromatic or diisocyanate trimer; n is 1-10; R<sub>1</sub> is selected from the group consisting of NCO, CN, H, SO<sub>2</sub>Cl, COCl, N(CH<sub>3</sub>)<sub>2</sub>, C(O)CH<sub>3</sub>, C(O)OCH<sub>3</sub>, C(O)OC<sub>2</sub>H<sub>5</sub>, C<sub>6</sub>H<sub>5</sub>, an acid chloride such as SOCl<sub>2</sub>, or another group with reactive functionality, or

15



wherein R<sub>2</sub> is branched or unbranched alkyl with 1 to 5 carbon atoms such as ethyl, isopropyl or sec-butyl, and the like; provided that Formula I cannot be derived from p-phenylene diisocyanate.

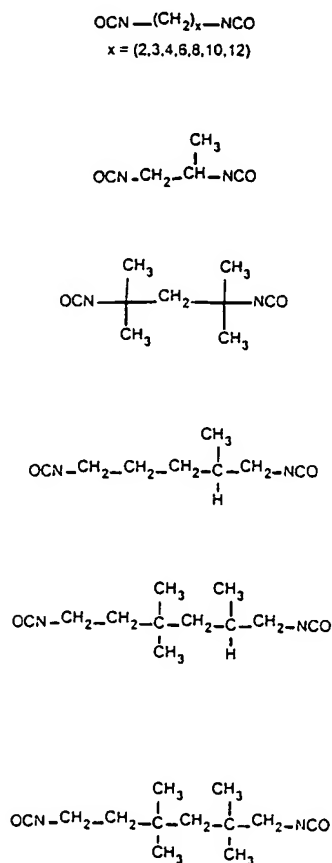
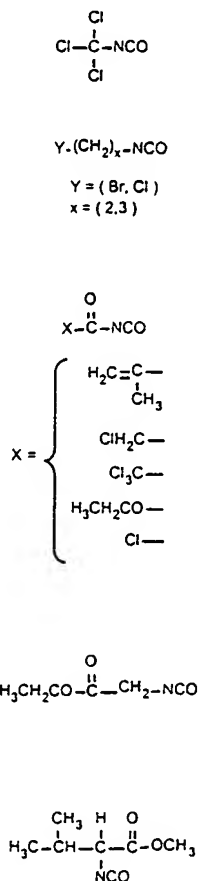
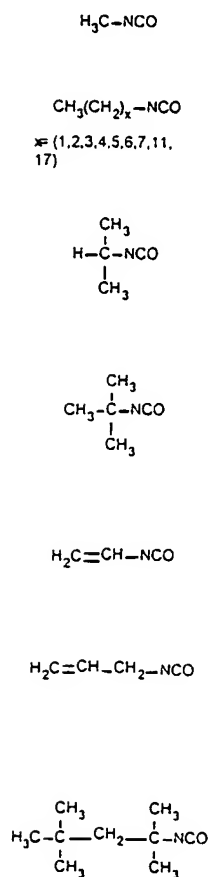
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2. A nitrile oxide precursor compound according to Claim 1

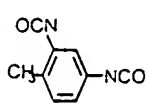
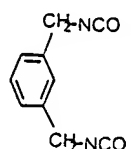
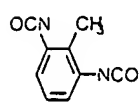
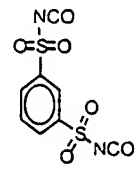
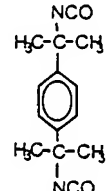
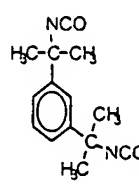
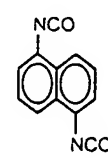
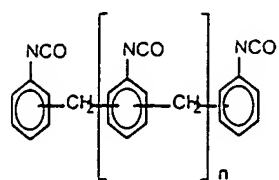
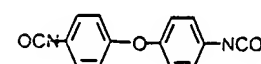
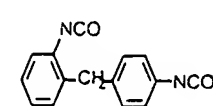
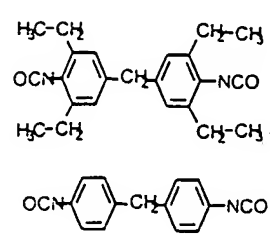
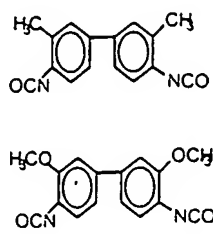
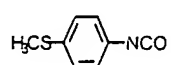
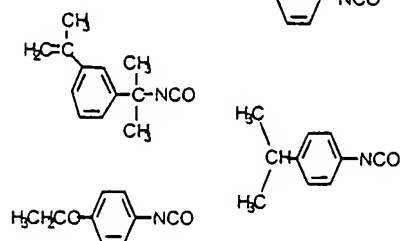
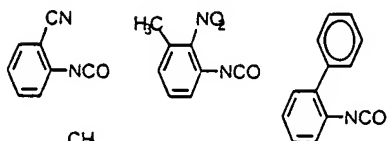
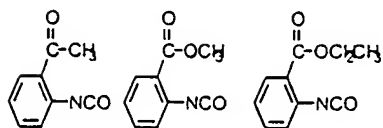
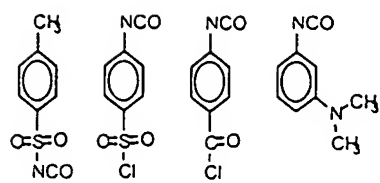
wherein R may be branched or unbranched, substituted or unsubstituted with

5 alkyl, sulfate, sulfonate, alkoxy, CN, NO<sub>2</sub> or an aromatic group. R may be a biphenyl group, fused rings or repeating aromatic groups.

3. A nitrile oxide precursor compound according to Claim 1 wherein R is derived from an aromatic or aliphatic residue of an isocyanate, 10 diisocyanate, polyisocyanate compound or residue of an isocyanate, diisocyanate, or polyisocyanate compound selected from the group consisting of:



5



T0T2T"4T09200T

Chemical structures of various isocyanate groups (NCO) used in the synthesis of polyurethanes, including cyclohexane, cyclohexene, and various substituted cyclohexane derivatives.

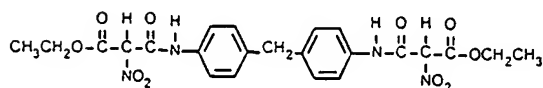
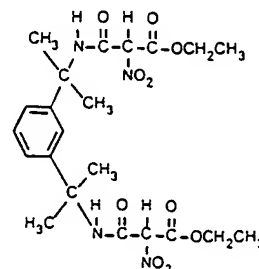
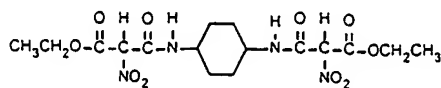
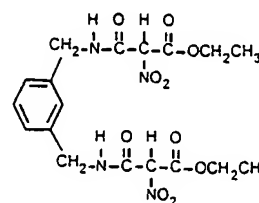
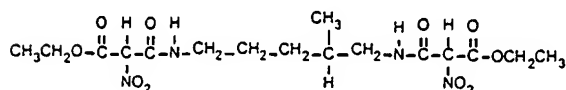
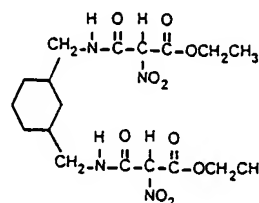
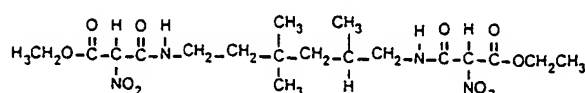
10

-3-

- 5 methylenebis(phenyl isocyanate) ("MDI"); DESMODUR W (hydrogenated MDI); isophorone diisocyanate ("IPDI"), 1-(1-isocyanato-1-methyl ethyl)-3-(1-methyl ethenyl)benzene("m-TMI"), isophorone triisocyanate, isophorone, tetramethylenexylenediisocyanate, ("TMXDI") and mixtures thereof.

- 10 5. A nitrile oxide precursor compound according to Claim 1 wherein R is C<sub>3-17</sub> alkyl.

6. A nitrile oxide precursor compound selected from the group consisting of:



15

7. A process for the generation of a nitrile oxide compound comprising the steps of

- 5           a)     generating a potassium enolate of ethyl nitroacetate in situ;  
          b)     isolating said enolate; and  
          c)     adding to said isolated enolate an isocyanate, diisocyanate or  
polyisocyanate, or isofunctional material.

10           8.     The process of Claim 7 additionally comprising the step of  
mixing the diisocyanate with a polar solvent prior to adding the diisocyanate to  
the enolate.

          9.     The process of Claim 8 wherein the polar solvent is selected  
15   from the group consisting of diglyme, monoglyme, glyme, THF, DMF and  
DMSO.

          10.    A process for crosslinking a polymer composition comprising  
adding a nitrile oxide precursor to the polymer solution and heating the  
20   mixture to form a nitrile oxide in situ and subsequently crosslink.

          11.    A process according to Claim 10 wherein the polymer  
comprises one or more pendant or terminal functional groups selected from  
the group consisting of alkenes, alkynes, nitriles and isocyanates.

25

          12.    A urethane composition which is stable to temperatures  
below 120°C comprising the nitrile oxide precursor compound of Claim 1.

5           13.     A pressure sensitive adhesive, reactive hot melt adhesive,  
polyurethane dispersion, thermosetting adhesive, thermoplastic adhesive or  
coating comprising a nitrile oxide precursor compound according to Claim 1.

10           14.     An AB copolymer comprising a nitrile oxide precursor  
compound according to Claim 3, wherein A is the nitrile oxide precursor  
compound derived from 1-(1-isocyanato-1-methyl ethyl)-3-(1-methyl  
ethenyl)benzene ("m-TMI") and B is a compound with olefinic functionality.

15           15.     A polyurethane reactive hot melt adhesive comprising a nitrile  
oxide precursor compound according to Claim 1.